

# SEQUENCE LISTING

<110> Tosato, Giovanna et al.

<120> Use of Calreticulin and Calretuculin Fragments to  
Inhibi Endothelial Cell Growth and Angiogenesis, and  
Suppress Tumor Growth

<130> 4239 53372

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<141> 1999-10-05

<150> US 60/103,438

<151> 1998-10-06

<160> 35

<170> PatentIn Ver. 2.0

<210> 1

<211> 1251

<212> DNA

<213> Homo sapiens

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<221> CDS

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gcc	gag	cct	gcc	gtc	tac	ttc	aag	gag	cag	ttt	ctg	gac	gga	gac	ggg	96
Ala	Glu	Pro	Ala	Val	Tyr	Phe	Lys	Glu	Gln	Phe	Leu	Asp	Gly	Asp	Gly	
		20						25					30			

tgg	act	tcc	cgc	tgg	atc	gaa	tcc	aaa	cac	aag	tca	gat	ttt	ggc	aaa	144
Trp	Thr	Ser	Arg	Trp	Ile	Glu	Ser	Lys	His	Lys	Ser	Asp	Phe	Gly	Lys	
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ttc	gtt	ctc	agt	tcc	ggc	aag	ttc	tac	ggt	gac	gag	gag	aaa	gat	aaa	192
Phe	Val	Leu	Ser	Ser	Gly	Lys	Phe	Tyr	Gly	Asp	Glu	Glu	Lys	Asp	Lys	
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ggt	ttg	cag	aca	agc	cag	gat	gca	cgc	ttt	tat	gct	ctg	tcg	gcc	agt	240
Gly	Leu	Gln	Thr	Ser	Gln	Asp	Ala	Arg	Phe	Tyr	Ala	Leu	Ser	Ala	Ser	
65					70				75					80		

ttc	gag	cct	ttc	agc	aac	aaa	ggc	cag	acg	ctg	gtg	gtg	cag	ttc	acg	288
Phe	Glu	Pro	Phe	Ser	Asn	Lys	Gly	Gln	Thr	Leu	Val	Val	Gln	Phe	Thr	
			85					90						95		

gtg	aaa	cat	gag	cag	aac	atc	gac	tgt	ggg	ggc	ggc	tat	gtg	aag	ctg	336
Val	Lys	His	Glu	Gln	Asn	Ile	Asp	Cys	Gly	Gly	Gly	Tyr	Val	Lys	Leu	
			100					105					110			



gca tac gct gag gag ttt ggc aac gag acg tgg ggc gta aca aag gca	1056
Ala Tyr Ala Glu Glu Phe Gly Asn Glu Thr Trp Gly Val Thr Lys Ala	
340 345 350	
gca gag aaa caa atg aag gac aaa cag gac gag gag cag agg ctt aag	1104
Ala Glu Lys Gln Met Lys Asp Lys Gln Asp Glu Glu Gln Arg Leu Lys	
355 360 365	
gag gag gaa gaa gac aag aaa cgc aaa gag gag gag gag gca gag gac	1152
Glu Glu Glu Glu Asp Lys Lys Arg Lys Glu Glu Glu Glu Ala Glu Asp	
370 375 380	
aag gag gat gat gag gac aaa gat gag gat gag gag gat gag gag gac	1200
Lys Glu Asp Asp Glu Asp Lys Asp Glu Asp Glu Glu Asp Glu Glu Asp	
385 390 395 400	
aag gag gaa gat gag gag gaa gat gtc ccc ggc cag gcc aag gac gag	1248
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Leu	
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20 25 30	
Trp Thr Ser Arg Trp Ile Glu Ser Lys His Lys Ser Asp Phe Gly Lys	
35 40 45	
Phe Val Leu Ser Ser Gly Lys Phe Tyr Gly Asp Glu Glu Lys Asp Lys	
50 55 60	
Gly Leu Gln Thr Ser Gln Asp Ala Arg Phe Tyr Ala Leu Ser Ala Ser	
65 70 75 80	
Phe Glu Pro Phe Ser Asn Lys Gly Gln Thr Leu Val Val Gln Phe Thr	
85 90 95	
Val Lys His Glu Gln Asn Ile Asp Cys Gly Gly Gly Tyr Val Lys Leu	
100 105 110	
Phe Pro Asn Ser Leu Asp Gln Thr Asp Met His Gly Asp Ser Glu Tyr	
115 120 125	
Asn Ile Met Phe Gly Pro Asp Ile Cys Gly Pro Gly Thr Lys Lys Val	
130 135 140	

105070-2000

His Val Ile Phe Asn Tyr Lys Gly Lys Asn Val Leu Ile Asn Lys Asp	145	150	155	160
Ile Arg Cys Lys Asp Asp Glu Phe Thr His Leu Tyr Thr Leu Ile Val	165	170	175	
Arg Pro Asp Asn Thr Tyr Glu Val Lys Ile Asp Asn Ser Gln Val Glu	180	185	190	
Ser Gly Ser Leu Glu Asp Asp Trp Asp Phe Leu Pro Pro Lys Lys Ile	195	200	205	
Lys Asp Pro Asp Ala Ser Lys Pro Glu Asp Trp Asp Glu Arg Ala Lys	210	215	220	
Ile Asp Asp Pro Thr Asp Ser Lys Pro Glu Asp Trp Asp Lys Pro Glu	225	230	235	240
His Ile Pro Asp Pro Asp Ala Lys Lys Pro Glu Asp Trp Asp Glu Glu	245	250	255	
Met Asp Gly Glu Trp Glu Pro Pro Val Ile Gln Asn Pro Glu Tyr Lys	260	265	270	
Gly Glu Trp Lys Pro Arg Gln Ile Asp Asn Pro Asp Tyr Lys Gly Thr	275	280	285	
Trp Ile His Pro Glu Ile Asp Asn Pro Glu Tyr Ser Pro Asp Pro Ser	290	295	300	
Ile Tyr Ala Tyr Asp Asn Phe Gly Val Leu Gly Leu Asp Leu Trp Gln	305	310	315	320
Val Lys Ser Gly Thr Ile Phe Asp Asn Phe Leu Ile Thr Asn Asp Glu	325	330	335	
Ala Tyr Ala Glu Glu Phe Gly Asn Glu Thr Trp Gly Val Thr Lys Ala	340	345	350	
Ala Glu Lys Gln Met Lys Asp Lys Gln Asp Glu Glu Gln Arg Leu Lys	355	360	365	
Glu Glu Glu Glu Asp Lys Lys Arg Lys Glu Glu Glu Glu Ala Glu Asp	370	375	380	
Lys Glu Asp Asp Glu Asp Lys Asp Glu Asp Glu Glu Asp Glu Glu Asp	385	390	395	400
Lys Glu Glu Asp Glu Glu Glu Asp Val Pro Gly Gln Ala Lys Asp Glu	405	410	415	
Leu				

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<400> 3

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Thr	Ser	Arg	Trp	Ile	Glu	Ser	Lys	His	Lys	Ser	Asp	Phe	Gly	Lys	Phe	20	25	30	
Val	Leu	Ser	Ser	Gly	Lys	Phe	Tyr	Gly	Asp	Glu	Glu	Lys	Asp	Lys	Gly	35	40	45	
Leu	Gln	Thr	Ser	Gln	Asp	Ala	Arg	Phe	Tyr	Ala	Leu	Ser	Ala	Ser	Phe	50	55	60	
Glu	Pro	Phe	Ser	Asn	Lys	Gly	Gln	Thr	Leu	Val	Val	Gln	Phe	Thr	Val	65	70	75	80
Lys	His	Glu	Gln	Asn	Ile	Asp	Cys	Gly	Gly	Gly	Tyr	Val	Lys	Leu	Phe	85	90	95	
Pro	Asn	Ser	Leu	Asp	Gln	Thr	Asp	Met	His	Gly	Asp	Ser	Glu	Tyr	Asn	100	105	110	
Ile	Met	Phe	Gly	Pro	Asp	Ile	Cys	Gly	Pro	Gly	Thr	Lys	Lys	Val	His	115	120	125	
Val	Ile	Phe	Asn	Tyr	Lys	Gly	Lys	Asn	Val	Leu	Ile	Asn	Lys	Asp	Ile	130	135	140	
Arg	Cys	Lys	Asp	Asp	Glu	Phe	Thr	His	Leu	Tyr	Thr	Leu	Ile	Val	Arg	145	150	155	160
Pro	Asp	Asn	Thr	Tyr	Glu	Val	Lys	Ile	Asp	Asn	Ser	Gln	Val	Glu	Ser	165	170	175	
Gly	Ser	Leu	Glu	Asp	Asp	Trp	Asp	Phe	Leu	Pro	Pro	Lys	Lys	Ile	Lys	180	185	190	
Asp	Pro	Asp	Ala	Ser	Lys	Pro	Glu	Asp	Trp	Asp	Glu	Arg	Ala	Lys	Ile	195	200	205	
Asp	Asp	Pro	Thr	Asp	Ser	Lys	Pro	Glu	Asp	Trp	Asp	Lys	Pro	Glu	His	210	215	220	
Ile	Pro	Asp	Pro	Asp	Ala	Lys	Lys	Pro	Glu	Asp	Trp	Asp	Glu	Glu	Met	225	230	235	240
Asp	Gly	Glu	Trp	Glu	Pro	Pro	Val	Ile	Gln	Asn	Pro	Glu	Tyr	Lys	Gly	245	250	255	
Glu	Trp	Lys	Pro	Arg	Gln	Ile	Asp	Asn	Pro	Asp	Tyr	Lys	Gly	Thr	Trp	260	265	270	
Ile	His	Pro	Glu	Ile	Asp	Asn	Pro	Glu	Tyr	Ser	Pro	Asp	Pro	Ser	Ile	275	280	285	

Tyr Ala Tyr Asp Asn Phe Gly Val Leu Gly Leu Asp Leu Trp Gln Val  
290 295 300

Lys Ser Gly Thr Ile Phe Asp Asn Phe Leu Ile Thr Asn Asp Glu Ala  
305 310 315 320

Tyr Ala Glu Glu Phe Gly Asn Glu Thr Trp Gly Val Thr Lys Ala Ala  
325 330 335

Glu Lys Gln Met Lys Asp Lys Gln Asp Glu Glu Gln Arg Leu Lys Glu  
340 345 350

Glu Glu Glu Asp Lys Lys Arg Lys Glu Glu Glu Glu Ala Glu Asp Lys  
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<212> PRT

<213> Homo sapiens

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20 25 30

Val Leu Ser Ser Gly Lys Phe Tyr Gly Asp Glu Glu Lys Asp Lys Gly  
35 40 45

Leu Gln Thr Ser Gln Asp Ala Arg Phe Tyr Ala Leu Ser Ala Ser Phe  
50 55 60

Glu Pro Phe Ser Asn Lys Gly Gln Thr Leu Val Val Gln Phe Thr Val  
65 70 75 80

Lys His Glu Gln Asn Ile Asp Cys Gly Gly Gly Tyr Val Lys Leu Phe  
85 90 95

Pro Asn Ser Leu Asp Gln Thr Asp Met His Gly Asp Ser Glu Tyr Asn  
100 105 110

Ile Met Phe Gly Pro Asp Ile Cys Gly Pro Gly Thr Lys Lys Val His  
115 120 125

Val Ile Phe Asn Tyr Lys Gly Lys Asn Val Leu Ile Asn Lys Asp Ile

130

135

140

Arg Cys Lys Asp Asp Glu Phe Thr His Leu Tyr Thr Leu Ile Val Arg  
 145 150 155 160

Pro Asp Asn Thr Tyr Glu Val Lys Ile Asp Asn Ser Gln Val Glu Ser  
 165 170 175

Gly Ser Leu Glu  
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&lt;210&gt; 5

&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 5

Cys Gly Pro Gly Thr Lys Lys Val His Val Ile Phe Asn Tyr Lys Gly  
 1 5 10 15

Lys Asn Val Leu Ile Asn Lys Asp Ile Arg Cys Lys Asp Asp Glu Phe  
 20 25 30

Thr His Leu Tyr Thr Leu Ile Val Arg Pro Asp Asn Thr Tyr Glu Val  
 35 40 45

Lys Ile Asp Asn Ser Gln Val Glu Ser Gly Ser Leu Glu  
 50 55 60

&lt;210&gt; 6

&lt;211&gt; 49

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 6

Asn Tyr Lys Gly Lys Asn Val Leu Ile Asn Lys Asp Ile Arg Cys Lys  
 1 5 10 15

Asp Asp Glu Phe Thr His Leu Tyr Thr Leu Ile Val Arg Pro Asp Asn  
 20 25 30

Thr Tyr Glu Val Lys Ile Asp Asn Ser Gln Val Glu Ser Gly Ser Leu  
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Glu

&lt;210&gt; 7

&lt;211&gt; 1958

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

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&lt;221&gt; CDS

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Met Leu Leu  
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tcc gtg ccg ttg ctg ctc ggc ctc ctc ggc ctg gcc gtc gcc gag cct 165  
Ser Val Pro Leu Leu Leu Gly Leu Leu Gly Leu Ala Val Ala Glu Pro  
5 10 15

gcc gtc tac ttc aag gag cag ttt ctg gac gga gac ggg tgg act tcc 213  
Ala Val Tyr Phe Lys Glu Gln Phe Leu Asp Gly Asp Gly Trp Thr Ser  
20 25 30 35

cgc tgg atc gaa tcc aaa cac aag tca gat ttt ggc aaa ttc gtt ctc 261  
Arg Trp Ile Glu Ser Lys His Lys Ser Asp Phe Gly Lys Phe Val Leu  
40 45 50

agt tcc ggc aag ttc tac ggt gac gag gag aaa gat aaa ggt ttg cag 309  
Ser Ser Gly Lys Phe Tyr Gly Asp Glu Glu Lys Asp Lys Gly Leu Gln  
55 60 65

aca agc cag gat gca cgc ttt tat gct ctg tgc gcc agt ttc gag cct 357  
Thr Ser Gln Asp Ala Arg Phe Tyr Ala Leu Ser Ala Ser Phe Glu Pro  
70 75 80

ttc agc aac aaa ggc cag acg ctg gtg gtg cag ttc acg gtg aaa cat 405  
Phe Ser Asn Lys Gly Gln Thr Leu Val Val Gln Phe Thr Val Lys His  
85 90 95

gag cag aac atc gac tgt ggg ggc ggc tat gtg aag ctg ttt cct aat 453  
Glu Gln Asn Ile Asp Cys Gly Gly Gly Tyr Val Lys Leu Phe Pro Asn  
100 105 110 115

agt ttg gac cag aca gac atg cac gga gac tca gaa tac aac atc atg 501  
Ser Leu Asp Gln Thr Asp Met His Gly Asp Ser Glu Tyr Asn Ile Met  
120 125 130

ttt ggt ccc gac atc tgt ggc cct ggc acc aag aag gtt cat gtc atc 549  
Phe Gly Pro Asp Ile Cys Gly Pro Gly Thr Lys Lys Val His Val Ile  
135 140 145

ttc aac tac aag ggc aag aac gtg ctg atc aac aag gac atc cgt tgc 597  
Phe Asn Tyr Lys Gly Lys Asn Val Leu Ile Asn Lys Asp Ile Arg Cys  
150 155 160

aag gat gat gag ttt aca cac ctg tac aca ctg att gtg cgg cca gac 645  
Lys Asp Asp Glu Phe Thr His Leu Tyr Thr Leu Ile Val Arg Pro Asp  
165 170 175

aac acc tat gag gtg aag att gac aac agc cag gtg gag tcc ggc tcc 693  
Asn Thr Tyr Glu Val Lys Ile Asp Asn Ser Gln Val Glu Ser Gly Ser  
180 185 190 195

1050th-0140860



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Leu Glu Asp Asp Trp Asp Phe Leu Pro Pro Lys Lys Ile Lys Asp Pro	
200 205 210	
gat gct tca aaa ccg gaa gac tgg gat gag cgg gcc aag atc gat gat	789
Asp Ala Ser Lys Pro Glu Asp Trp Asp Glu Arg Ala Lys Ile Asp Asp	
215 220 225	
ccc aca gac tcc aag cct gag gac tgg gac aag ccc gag cat atc cct	837
Pro Thr Asp Ser Lys Pro Glu Asp Trp Asp Lys Pro Glu His Ile Pro	
230 235 240	
gac cct gat gct aag aag ccc gag gac tgg gat gaa gag atg gac gga	885
Asp Pro Asp Ala Lys Lys Pro Glu Asp Trp Asp Glu Glu Met Asp Gly	
245 250 255	
gag tgg gaa ccc cca gtg att cag aac cct gag tac aag ggt gag tgg	933
Glu Trp Glu Pro Pro Val Ile Gln Asn Pro Glu Tyr Lys Gly Glu Trp	
260 265 270 275	
aag ccc cgg cag atc gac aac cca gat tac aag ggc act tgg atc cac	981
Lys Pro Arg Gln Ile Asp Asn Pro Asp Tyr Lys Gly Thr Trp Ile His	
280 285 290	
cca gaa att gac aac ccc gag tat tct ccc gat ccc agt atc tat gcc	1029
Pro Glu Ile Asp Asn Pro Glu Tyr Ser Pro Asp Pro Ser Ile Tyr Ala	
295 300 305	
tat gat aac ttt ggc gtg ctg ggc ctg gac ctg tgg cag gtc aag tct	1077
Tyr Asp Asn Phe Gly Val Leu Gly Leu Asp Leu Trp Gln Val Lys Ser	
310 315 320	
ggc acc atc ttt gac aac ttc ctg atc acc aac gat gag gca tac gct	1125
Gly Thr Ile Phe Asp Asn Phe Leu Ile Thr Asn Asp Glu Ala Tyr Ala	
325 330 335	
gag gag ttt ggc aac gag acg tgg ggc gta aca aag gca gca gag aaa	1173
Glu Glu Phe Gly Asn Glu Thr Trp Gly Val Thr Lys Ala Ala Glu Lys	
340 345 350 355	
caa atg aag gac aaa cag gac gag gag cag agg ctt aag gag gag gaa	1221
Gln Met Lys Asp Lys Gln Asp Glu Glu Gln Arg Leu Lys Glu Glu Glu	
360 365 370	
gaa gac aag aaa cgc aaa gag gag gag gag gca gag gac aag gag gat	1269
Glu Asp Lys Lys Arg Lys Glu Glu Glu Glu Ala Glu Asp Lys Glu Asp	
375 380 385	
gat gag gac aaa gat gag gat gag gag gat gag gag gac aag gag gaa	1317
Asp Glu Asp Lys Asp Glu Asp Glu Glu Asp Glu Glu Asp Lys Glu Glu	
390 395 400	
gat gag gag gaa gat gtc ccc ggc cag gcc aag gac gag ctg tag	1362
Asp Glu Glu Glu Asp Val Pro Gly Gln Ala Lys Asp Glu Leu	
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Ile Asp Asn Ser Gln Val Glu Ser Gly Ser Leu Glu  
50 55 60

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His Leu Tyr Thr Leu Ile Val Arg Pro Asp Asn Thr Tyr Glu Val Lys  
35 40 45  
Ile Asp Asn Ser Gln Val Glu Ser Gly Ser Leu Glu Asp Asp Trp Asp  
50 55 60

Phe Leu Pro Pro Lys Lys Ile Lys Asp Pro Asp Ala Ser Lys Pro Glu  
65 70 75 80  
Asp Trp Asp Glu Arg Ala Lys Ile Asp Asp Pro Thr Asp Ser Lys Pro  
85 90 95  
Glu Asp Trp Asp Lys Pro Glu His Ile Pro Asp Pro Asp Ala Lys Lys  
100 105 110  
Pro Glu Asp Trp Asp Glu Glu Met Asp Gly Glu Trp Glu Pro Pro Val  
115 120 125  
Ile Gln Asn Pro Glu Tyr Lys Gly Glu Trp Lys Pro Arg Gln Ile Asp  
130 135 140  
Asn Pro Asp Tyr Lys Gly Thr Trp Ile His Pro Glu Ile Asp Asn Pro  
145 150 155 160  
Glu Tyr Ser Pro Asp Pro Ser Ile Tyr Ala Tyr Asp Asn Phe Gly Val  
165 170 175  
Leu Gly Leu Asp Leu Trp Gln Val Lys Ser Gly Thr Ile Phe Asp Asn  
180 185 190  
Phe Leu Ile Thr Asn Asp Glu Ala Tyr Ala Glu Glu Phe Gly Asn Glu  
195 200 205  
Thr Trp Gly Val Thr Lys Ala Ala Glu Lys Gln Met Lys Asp Lys Gln  
210 215 220  
Asp Glu Glu Gln Arg Leu Lys Glu Glu Glu Glu Asp Lys Lys Arg Lys  
225 230 235 240  
Glu Glu Glu Glu Ala Glu Asp Lys Glu Asp Asp Glu Asp Lys Asp Glu  
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<223> Xaa represents I, L, G, C, or A

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<220>  
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<210> 15  
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<210> 16  
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<223> Description of Artificial Sequence:Portion of  
steroid nuclear receptor

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<212> PRT

<213> Artificial Sequence

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steroid nuclear receptor

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steroid nuclear receptor

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<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Portion of  
steroid nuclear receptor

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Thr Cys Glu Gly Cys Thr Gly Phe Phe Lys Arg Ser Ile Arg Lys  
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<210> 30

<211> 15

<212> PRT

<213> Artificial Sequence



Figure 1. Schematic diagram of the experimental setup. The subject is seated in a chair and views the target through a video camera. The target is a vertical rod with a horizontal bar at the end. The subject's hand is positioned at the base of the rod. The distance between the subject's hand and the target is 100 cm. The target is 10 cm in diameter and 100 cm in height. The subject's hand is positioned at the base of the rod. The distance between the subject's hand and the target is 100 cm. The target is 10 cm in diameter and 100 cm in height.

<400> 30

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<211> 15

<212> PRT

<213> Artificial Sequence

<223> Description of Artificial Sequence:Portion of steroid nuclear receptor

<400> 31

<210> 32

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Portion of glucocorticoid receptor

<400> 32

<210> 33

<211> 6

<212> PRT

<213> Artificial Sequence

 $\langle 220 \rangle$ 

<223> Description of Artificial Sequence:Portion of estrogen receptor

<400> 33

<210> 34

$\langle 211 \rangle$  6

<212> PRT

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<223> Description of Artificial Sequence:Portion of  
thyroid receptor

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Lys Ser Phe Phe Arg Arg  
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<210> 35

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<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Portion of  
retinoic acid receptor

<400> 35

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1 5

105010-131120350